

WHAT IS CLAIMED IS:

1. A circuit adapted to be responsive to an input current supplied to an input terminal of the circuit, comprising:

an input stage adapted to establish a first bias voltage at the input terminal in response to the input current;

a current stage adapted to produce at least one mirror current proportional to the input current in response to the first bias voltage and a second bias voltage;

a feedback stage adapted to produce a feedback current proportional to the input current in response to the at least one mirror current; and

a reference bias stage adapted to establish the second bias voltage in response to the feedback current from the feedback stage, whereby the first and second bias voltages track the input current.

2. The circuit of claim 1, wherein the at least one current includes a bias current and a main mirror current.

3. The circuit of claim 1, wherein the feedback stage includes:

a reference voltage stage adapted to establish third and fourth bias voltages in response to the bias current and the main mirror current; and

a current source adapted to produce the feedback current in response to the third and fourth bias voltages.

4. A bias circuit for establishing bias voltages from an input current supplied to an input terminal of the bias circuit, comprising:

input stage means for establishing a first bias voltage at the input terminal in response to the input current;

current stage means for producing a bias current and a main mirror current each proportional to the input current in response to the first bias voltage and a second bias voltage;

feedback stage means for producing a feedback current proportional to the input current in response to the bias current and the main mirror current; and

reference bias stage means for establishing the second bias voltage in response to the feedback current, whereby the first and second bias voltages track the input current.

5. The circuit of claim 4, further comprising means for setting a value of the input current supplied to the input terminal.

6. The circuit of claim 4, further comprising start-up stage means for providing a trickle-current to the reference bias stage to force the bias circuit into a stable operating condition.

7. The circuit of claim 4, further comprising shut-down stage means for selectively enabling and disabling the supply of the input current to the input terminal so as to selectively enable and disable an operation of the bias circuit, respectively.

8. A method of establishing bias voltages suitable for biasing current sources from an input current supplied to a bias circuit, comprising:

- (a) receiving the input current;
- (b) establishing a first bias voltage in response to the input current;
- (c) producing at least one mirror current proportional to the input current in response to the first bias voltage and a second bias voltage;
- (d) producing a feedback current proportional to the input current in response to the at least one mirror current; and

(e) establishing the second bias voltage in response to the feedback current of step (d), whereby the first and second bias voltages track the input current.

9. The method of claim 8, wherein step (c) comprises:

(c)(i) producing a main mirror current proportional to the input current in response to the first bias voltage and the second bias voltage; and

(c)(ii) producing a bias current proportional to the input current in response to the first bias voltage and the second bias voltage.

10. The method of claim 9, wherein step (d) comprises:

(d)(i) establishing third and fourth bias voltages in response to the bias current and the main mirror current; and

(d)(ii) producing the feedback current in response to the third and fourth bias voltages.

11. The method of claim 10, wherein:

step (b) and step (e) together comprise establishing the first and second bias voltages such that the first and second bias voltages are suitable for biasing one or more current sources of a first type; and

step (d)(i) comprises establishing the third and fourth bias voltages such that the third and fourth bias voltages are suitable for biasing current sources of a second type complementary to the first type.

12. The method of claim 8, further comprising:

supplying a trickle current to establish a stable operating condition of the bias circuit.

13. The method of claim 12, further comprising:

reducing the trickle current from an initial current value to a final current value in response to a rise in the second bias voltage indicative of the stable operating condition.

14. The method of claim 8, further comprising:

selectively enabling and disabling the circuit by selectively enabling and disabling the input current in step (a) in response to an enable/disable signal.